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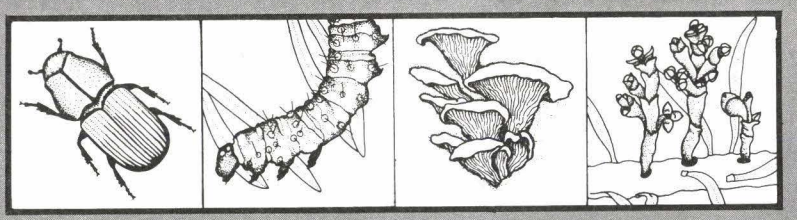

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DWARF MISTLETOE LOSS ASSESSMENT ON THE FLATHEAD AND KOOTENAI NATIONAL FORESTS, MONTANA

By

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ABSTRACT

We conducted a survey for dwarf mistletoe in Douglas-fir (DF), western larch (WL), and lodgepole pine (LP) on the Flathead and Kootenai NF's in 1980. Infestation levels were:

Species	Flathead	Kootenai
DF	0.7%	1.4%
WL	33.7%	15.3%
LP	18.4%	22.5%

Annual volume losses were:

Species	Flathead	Kootenai
DF	30 M ft^3	126 M ft^3
WL	936 M ft^3	902 M ft^3
LP	641 M ft^3	2,250 M ft^3

INTRODUCTION

We surveyed the Flathead and Kootenai National Forests (figure 1) in 1980 to help estimate incidence of dwarf mistletoe in Douglas-fir, western larch, and lodgepole pine. We also estimated annual cubic foot volume loss in the three species. We surveyed these Forests as part of a larger effort to make statewide loss estimates which will be used in setting program priorities at the Regional and national levels as well as for land management plans.

METHODS

We sampled subcompartments on the two Forests that had been previously sampled for timber growth and yield. We first located all subcompartments on Forest maps, (scale: 1/2 inch = 1 mile), then selected about half of them for the survey. Our sample was based on forest

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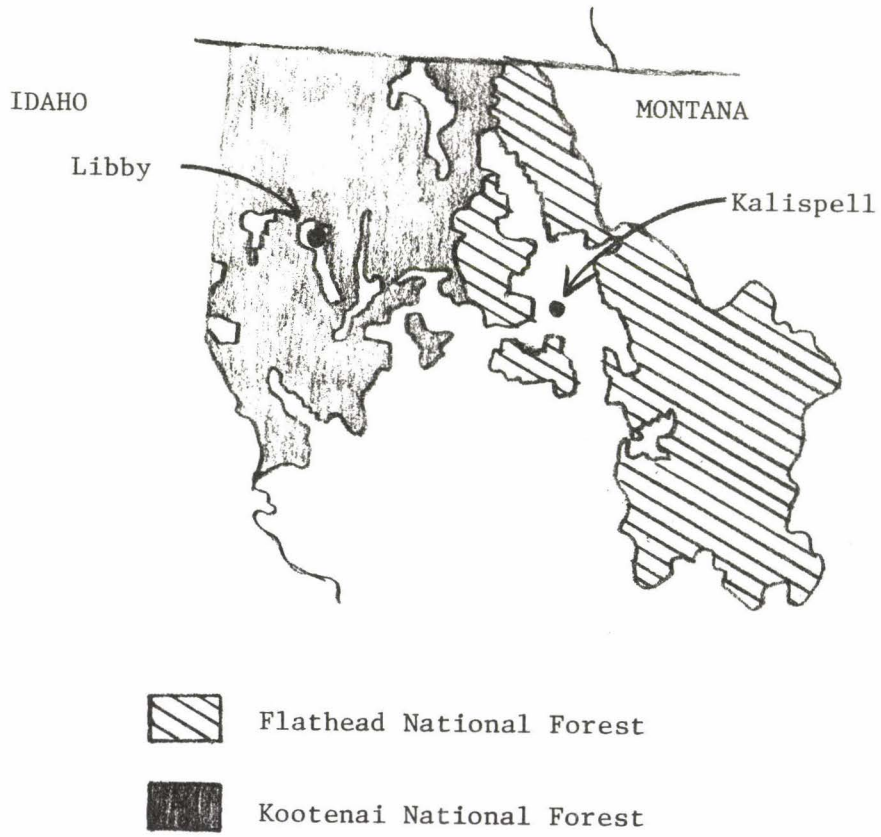

Figure 1.--Montana National Forests surveyed for dwarf mistletoe losses in 1980.

type (DF, WL, LP) and accessibility (less than 1 mile from a road). We excluded subcompartments within designated wilderness areas.

Each sample point within the selected subcompartments was considered a plot. Field data forms generated directly by computer were printed with all identification and measurement data from the original inventory. Space was provided to enter current data, which consisted of d.b.h., height, and dwarf mistletoe rating (DMR) on the six-class system (Hawksworth 1977) for all Douglas-fir, western larch, and lodgepole pine. Success in finding previously measured trees exceeded 90 percent.

We used a computer to summarize our field data for each Forest and species by dwarf mistletoe occurrence and DMR.

We estimated lodgepole pine volume losses with simulated yield program RMYLD (Edminster 1978).

We currently have no simulated yield programs for dwarf mistletoe-infested Douglas-fir or western larch. Based on studies in Douglas-fir by Haglund and Dooling (1972) and in western larch by On and Dooling (1969), we estimated overall average volume losses caused by these two dwarf mistletoe species to be about 20 cubic feet per acre per year.

RESULTS

Douglas-fir--DF type occurs on 219 M acres on the Flathead NF. Only two of 275 DF plots were dwarf mistletoe infested (0.7 percent). About 1.5 M acres of type are infested for an annual loss of 30 M cubic feet.

Douglas-fir type occurs on 448.7 M acres on the Kootenai NF. Only two of 143 DF plots were dwarf mistletoe infested (1.4 percent). About 6.3 M acres of type are infested for an annual loss of 126 M cubic feet.

Western larch--WL type occurs on 138.8 M acres on the Flathead NF. One hundred three of 306 WL plots were dwarf mistletoe infested (33.7 percent). About 46.8 M acres of type are infested for an annual loss of 936 M cubic feet.

Western larch type occurs on 294.8 M acres on the Kootenai NF. Twenty-four of 157 WL plots were dwarf mistletoe infested (15.3 percent). About 45.1 M acres of type are infested for an annual loss of 902 M cubic feet.

Lodgepole pine--LP type occurs on 228 M acres on the Flathead NF. Fifty-six of 305 LP plots were dwarf mistletoe infested (18.4 percent). About 41.9 M acres of type are infested for an annual loss of 641 M cubic feet.

Lodgepole pine type occurs on 540.4 M acres on the Kootenai NF. Forty of 178 LP plots were dwarf mistletoe infested (22.5 percent). About 121.6 M acres of type are infested for an annual loss of 2,250 M cubic feet.

These growth loss estimates, accurate within ±20 percent, are summarized in table 1.

Table 1--Estimated Growth Loss Caused by Dwarf Mistletoes

National Forest	Species[a/]	M acres type[b/]	Infestation		Volume		
			%	M acres	Ft^3/acre/year	loss Mft^3	Total Mft^3
Flathead	DF	219.0	0.7	1.5	20.0	30	
	WL	138.8	33.7	46.8	20.0	936	
	LP	228.0	18.4	41.9	15.3	641	1,607
Kootenai	DF	448.7	1.4	6.3	20.0	126	
	WL	294.8	15.3	45.1	20.0	902	
	LP	540.4	22.5	121.6	18.5	2,250	3,278

a/ DF=Douglas-fir; WL= western larch; LP=lodgepole pine.
b/ Total acres of type from land status records.

DISCUSSION

Our surveys for assessing dwarf mistletoe loss are now complete for Montana National Forests. Before we started these surveys, we considered our estimates to be conservative. We have been pleasantly surprised to find they were much too liberal; and we have constantly revised our original estimates downward. However, an annual volume loss on these two Forests of more than 4.8 MM cubic feet is not acceptable. Such losses can be reduced by modifying silvicultural treatments to include dwarf mistletoe prevention and suppression (FSM 2478; FSM 3481, R1 Supp 8).

LITERATURE CITED

Edminster, C. B.
1978. RMYLD: Computation of yield tables for even-aged and two-aged stands. USDA-Forest Service Res. Paper RM-199.

Haglund, S. A., and O. J. Dooling.
1972. Observations on the impact of dwarf mistletoe on Douglas-fir in western Montana. USDA-Forest Service, Northern Region Insect and Disease Report D-72-1.

Hawksworth, F. G.
1977. The 6-class dwarf mistletoe rating system. USDA-Forest Service Gen. Tech. Rep. RM-48.

On, D., and O. J. Dooling.
1969. A study of the effect of dwarf mistletoe infection on the growth of western larch. USDA-Forest Service, Northern Region Div. Timber Management, unpublished.